Application No. 10/589,379 Amendment dated November 3, 2010

Response to Office Action August 3, 2010

AMENDMENTS TO THE CLAIMS

Docket No.: 63558C

1. (Currently Amended) A copolymer formed by polymerizing propylene, 4-methyl-l-pentene, styrene, or another C_{4-20} α -olefin, and a copolymerizable comonomer in the presence of a composition comprising the admixture or reaction product resulting from combining:

(A) a first olefin polymerization catalyst comprising a complex <u>corresponding to the</u> formula

$$R^{20}$$
 R^{20}
 R^{20}

R²⁰ is an aromatic or inertly substituted aromatic group containing from 5 to 20 atoms not counting hydrogen, or a polyvalent derivative thereof;

T³ is a hydrocarbylene or silane group having from 1 to 20 atoms not counting hydrogen, or an inertly substituted derivative thereof;

M³ is a Group 4 metal;

G is an anionic, neutral or dianionic ligand group;

g is a number from 1 to 5 indicating the number of G groups; and

bonds and electron donative interactions are represented by lines and arrows respectively

comprising a transition metal selected from Groups 4-8 of the Periodic Table of the Elements and one or more delocalized, π bonded ligands or polyvalent Lewis base ligands;

- (B) a second olefin polymerization catalyst capable of preparing polymers differing in chemical or physical properties from the polymer prepared by catalyst (A) under equivalent polymerization conditions; and
- (C) a chain shuttling agent.

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2. (Currently Amended) A copolymer formed by polymerizing propylene, 4-methyl-1-pentene, styrene, or another C_{4-20} α -olefin, and a copolymerizable comonomer in the presence of a composition comprising the admixture or reaction product resulting from combining:

(A) a first olefin polymerization catalyst comprising a complex <u>corresponding to the</u> formula

$$R^{20}$$
 R^{20}
 R^{20}

R²⁰ is an aromatic or inertly substituted aromatic group containing from 5 to 20 atoms not counting hydrogen, or a polyvalent derivative thereof;

T³ is a hydrocarbylene or silane group having from 1 to 20 atoms not counting hydrogen, or an inertly substituted derivative thereof;

M³ is a Group 4 metal;

G is an anionic, neutral or dianionic ligand group;

g is a number from 1 to 5 indicating the number of G groups; and

bonds and electron donative interactions are represented by lines and arrows

<u>respectively</u>

comprising a transition metal selected from Groups 4-8 of the Periodic Table of the Elements and one or more delocalized, π -bonded ligands or polyvalent Lewis base ligands;

(B) a second olefin polymerization catalyst having a comonomer incorporation index less than 95 percent of the comonomer incorporation index of catalyst (A); and(C) a chain shuttling agent.

3-22. (canceled)

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23. (Previously presented) A copolymer according to claim 1 wherein the shuttling agent is a trihydrocarbyl aluminum-or dihydrocarbyl zinc-compound containing from 1 to 12 carbons in each hydrocarbyl group.

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- 24. (Original) A copolymer according to claim 23 wherein the shuttling agent is triethylaluminum or diethylzinc.
- 25. (canceled)
- 26. (Previously presented) The copolymer according to claim 1 wherein catalyst (A) corresponds to the formula:

$$Ar^{2}M^{3}G_{g}Ar^{2}$$

, wherein:

T³ is a divalent bridging group of from 2 to 20 atoms not counting hydrogen; and Ar² independently each occurrence is an arylene or an alkyl-or aryl-substituted arylene group of from 6 to 20 atoms not counting hydrogen;

M3 is a Group 4 metal;

G independently each occurrence is an anionic, neutral or dianionic ligand group; g is a number from 1 to 5 indicating the number of such X groups; and electron donative interactions are represented by arrows.

27. (Original) A copolymer according to claim 23 wherein catalyst (A) corresponds to the formula:

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where M³ is Hf or Zr;

 Ar^4 is C_{6-20} aryl or inertly substituted derivatives thereof, especially 3,5-di(isopropyl)phenyl, 3,5-di(isobutyl)phenyl, dibenzo-1H-pyrrole-1-yl, or anthracen-5-yl, and

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 T^4 independently each occurrence comprises a C_{3-6} alkylene group, a C_{3-6} cycloalkylene group, or an inertly substituted derivative thereof;

R²¹ independently each occurrence is hydrogen, halo, hydrocarbyl, trihydrocarbylsilyl, or trihydrocarbylsilylhydrocarbyl of up to 50 atoms not counting hydrogen; and

G, independently each occurrence is halo or a hydrocarbyl or trihydrocarbylsilyl group of up to 20 atoms not counting hydrogen, or 2 G groups together are a divalent derivative of the foregoing hydrocarbyl or trihydrocarbylsilyl groups.

28. (Original) A copolymer according to claim 23 wherein catalyst (A) corresponds to the formula:

$$Ar^{4} \xrightarrow{Q} R^{21}$$

$$Ar^{4} \xrightarrow{Q} Ar^{4}$$

$$R^{21} \xrightarrow{Q} Ar^{4}$$

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wherein Ar⁴ is 3,5-di(isopropyl)phenyl, 3,5-di(isobutyl)phenyl, dibenzo-lH-pyrrole-1-yl, or anthracen-5-yl,

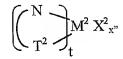
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R²¹ is hydrogen, halo, or C₁₋₄ alkyl, especially methyl

T⁴ is propan-1, 3-diyl or butan-1, 4-diyl, and

G is chloro, methyl or benzyl.

29. (Previously presented) A copolymer according to claim 1 wherein catalyst (B) corresponds to the formula:



wherein

M² is a metal of Groups 4-10 of the Periodic Table of the elements;

T² is a nitrogen, oxygen or phosphorus containing group;

X² is halo, hydrocarbyl, or hydrocarbyloxy;

t is one or two;

x" is a number selected to provide charge balance;

and T² and N are linked by a bridging ligand.

30-34. (canceled)